

REMARKS

The Examiner rejected pending claims 11-21 under the 1st and 2nd paragraphs of 35 U.S.C. §112 alleging that the specification is not enabling and that the claim language is unclear. The specification and drawings clearly describe the claimed subject matter in detail and support all claimed subject matter. The specification also provides explicit definitions for the terms to which the Examiner objected.

The claims are directed to a method for gluing electronic components to the surface of a circuit substrate. With the claimed method, a gripper grips and holds an electronic component to be glued to the surface of the substrate. *E.g.*, Spec., p. 8, ln. 12 – p. 9, ln. 11; Figure 1. The gripper then moves towards the surface of the substrate (i.e., a first time) to press the component onto the substrate surface. There are a plurality of adhesive dots on the surface that will glue the component to the substrate. As the gripper moves towards the substrate, the component contacts and deforms the adhesive dots such that the dots begin to merge into a thin adhesive-conductive layer. The gripper also measures a counteracting force that opposes this movement. When the measured force reaches a predetermined threshold, the gripper is at a target distance away from the substrate. The gripper then releases the component and moves away from the substrate. *E.g.* Spec., p. 9, ln. 13 – p. 10, ln. 4; Figures 2A-2C.

As seen in Figures 2A-2C, the first time the gripper approaches the substrate, it does so at an angle. Thus, the component being placed on the substrate surface will not contact all the adhesive dots at the same time. Instead, the component will contact and deform some adhesive dots before contacting others. This can be problematic because not all the adhesive dots will merge into an adhesive layer having a uniform thickness as a result of the pressure from the component. Therefore, once the gripper releases and moves away from the component, the gripper turns or rotates 180° about an axis A that is substantially perpendicular to the surface of the substrate. This causes the “tilted” side of the gripper (i.e., the side closest to the substrate)

to move to the other side of the component. *E.g. Spec.*, p. 10, ll. 4-9; Figure 2D. The gripper is then moved toward the substrate once again (i.e., a second time) to press the component onto the adhesive until it reaches the target distance. This second “pressing” causes the dots of adhesive to form a substantially uniform adhesive layer between the substrate surface and the electronic component. *E.g. Spec.*, p. 10, ll. 11-21; Figure 2E.

Turning to the rejections, the Examiner rejected the claims under §112 ¶1 based on language that is not used in the claims. Specifically, the Examiner does not understand “how the circuit component can be properly placed onto a circuit substrate by a gripper that will place the component by means of ... turning the gripper towards the surface of the circuit substrate a first time.” Office Action, p. 2, ¶1. The claims do not recite this language. Rather, the claims recite, “moving” the gripper towards the substrate (two different times), and “turning” the gripper about an axis that is perpendicular to the substrate surface.

Regarding the §112 ¶2 rejections, the Examiner alleges that the claims are vague and unclear, and asks multiple questions about the claims. *Office Action*, pp. 2-3. First, the Examiner questions what it means to turn the gripper around an axis perpendicular to the surface of the circuit substrate, “since the axis can be perpendicular to the component’s lengthwise measurement.” *Office Action*, p. 3, ¶1. However, the Examiner misstates the claim language. The claims recite, “turning the gripper around an axis perpendicular to the surface of the circuit substrate,” not perpendicular to the component. The Examiner’s attention is respectfully directed to Figure 2D and its corresponding description on page 10 of the specification. *Spec.*, p. 10, ll. 4-9.

The Examiner questioned why the gripper is moved toward the substrate a second time after the component is released, as such a movement seems “redundant.” The Examiner is respectfully directed to page 10, line 11 – page 11, line 3.

The Examiner also questioned the meaning of the term "target distance." The specification explicitly defines the target distance in several parts of the specification, as being the point at which the counteracting force opposing the gripper as it moves toward the substrate meets a predefined value. *E.g.*, Spec., p. 5, ll. 12-17.

Finally, the Examiner questions where the "detected local coordinate" of claim 13 is located. For an explanation of this coordinate and how it can be located, the Examiner is respectfully directed to page 5, lines 12-24.

The §112 rejections appear to be based on language that is not used in the claims. The specification and drawings fully support and enable the currently pending claims, and the terms the Examiner asserts are unclear and vague are explicitly defined in the specification. Accordingly, the §112 ¶1 rejections are moot and should be withdrawn.

Respectfully submitted,

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